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EXAMINER	
POKRZYWA, JOSEPH R	

ART UNIT	PAPER NUMBER
2622	

DATE MAILED: 05/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/380,270	THUREN, ANDERS	
	Examiner	Art Unit	
	Joseph R. Pokrzywa	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 December 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment was received on 12/7/04, and has been entered and made of record. Currently, **claims 1-19** are pending.

Response to Arguments

2. Applicant's arguments filed 12/7/04 have been fully considered but they are not persuasive.

3. In response to applicant's arguments regarding the rejection of claim 1, which was cited in the Office action dated 10/18/04 as being unpatentable over Teitzel *et al.* (U.S. Patent Number 5,533,170) in view of Kelley *et al.* (U.S. Patent Number 5,701,405), whereby applicant argues on page 9 that motivation for the above combination has not been established. The primary reference of Teitzel teaches of a second conversion step that is performed in at least two processor units, as read in column 9, line 19-column 11, line 28. However, Teitzel does not expressly disclose if the at least two beam processor units, which are performing the second conversion step, operate simultaneously but on different fields. The secondary reference, Kelley *et al.*, is being utilized to teach that it would have been obvious to have at least two beam processors, performing a conversion, operating simultaneously, but on two different fields, whereby Kelley teaches this in column 4, line 60-column 5, line 11, and column 5, line 41-column 6, line 46. Further, Kelley teaches of motivation for having parallel processors operating simultaneously in column 6, lines 6-8, wherein Kelley discusses that "two or more pipelines can

be used to increase performance". Thus, a system having a parallel structure, as seen by Kelley, as well as in Teitzel, can have a processor, which performs a conversion of cutting geometries in a fractured database into scan lines, operate simultaneously on two different fields, as recognized by Kelley. Therefore, it would have been obvious to a person of ordinary skill in the art to include the rendering pipelines taught by Kelley in the system of Teitzel.

Continuing, applicant argues on page 13 that Kelley fails to teach of performing the second conversion in at least two of the beam processor units. Currently claim 1 requires that the second conversion performs "cutting the geometries in the fractured database into scan lines, and generating for each scan line a scan list containing geometries to be written in the scan line, so called segments". The examiner notes that the primary reference teaches this conversion step. Particularly, Teitzel can be interpreted as teaching a second conversion step of cutting the geometries in the fractured database into scan lines, as read in column 8, line 54-column 9, line 53, and generating for each scan line a scan list containing geometries to be written in the scan line, so called segments, as read in column 9, line 19-column 10, line 12. As discussed above, Teitzel does not expressly disclose if the at least two beam processor units, which are performing the second conversion step, operate simultaneously but on different fields. Regardless, Kelley can be interpreted as teaching a second conversion step of cutting the geometries in the fractured database into scan lines, as read in column 5, line 41-column 6, line 46, and generating for each scan line a scan list containing geometries to be written in the scan line, so called segments, as seen in column 6, line 9-column 7, line 52. Further, Kelley teaches of performing the second conversion step in at least two of the beam processor units, operating simultaneously but on different writing fields, as seen in Fig. 5, column 5, line 41-column 6, line 46. Therefore, it

would have been obvious to one of ordinary skill in the art at the time the invention was made to include the processor units taught by Kelley, within the system of Teitzel.

4. Therefore, the rejection of **claim 1**, as well as **claim 14**, which were cited in the Office action dated 10/18/04 as being unpatentable over Teitzel *et al.* in view of Kelley *et al.*, are maintained and repeated in this Office action.

Claim Objections

5. The objection to claims 1 and 14, as cited in the Office action dated 10/18/04, is overcome by the changes set forth in the amendment dated 12/7/04.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. **Claim 19** is rejected under 35 U.S.C. 102(b) as being anticipated by Teitzel et al. (U.S. Patent Number 5,533,170, cited in the Office action dated 10/18/04).

Regarding ***claim 19***, Teitzel discloses an apparatus for writing of patterns on a light sensitive surface comprising at least two modulated focused laser beams scanning the surface in interlaced parallel scan lines (see abstract, and column 3, line 44 through column 4, line 31), for each laser beam a beam processor unit with data conversion logic and means for modulating the laser beam (column 7, lines 3 through 32, and column 11, lines 30 through 41), a processor

adapted to accept input data containing the geometries to be written on a workpiece (column 7, line 36 through column 8, line 23), and adapted to fracture the input data into writing fields (column 7, lines 36 through 62), a segmentizer adapted to cut the geometries in the fractured database into scan lines (column 8, line 54 through column 9, line 53), and adapted to generate for each scan line a scan list containing geometries to be written in the scan line (column 9, line 19 through column 10, line 12), a resolver adapted to distribute the scan lists to the beam processor units in accordance with the interlacing of the scan lines (column 10, line 63 through column 11, line 28), wherein the individual beam processors units are adapted to convert the scan lists into analog power modulation sequences for the laser beams (column 12, lines 11 through 39).

Claim Rejections - 35 USC § 103

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. **Claims 1-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Teitzel *et al.* (U.S. Patent Number 5,533,170, cited in the Office action dated 10/18/04) in view of Kelley *et al.* (U.S. Patent Number 5,701,405, cited in the Office action dated 10/18/04).

Regarding ***claim 1***, Teitzel discloses a method for writing patterns on a light sensitive surface (see abstract, and column 3, line 44 through column 4, line 31) comprising the steps of providing at least two modulated focused laser beams scanning the surface in interlaced parallel scan lines (column 3, line 44 through column 4, line 31), providing for each beam a beam processor unit with data conversion logic and means for modulating the laser beam (column 7,

lines 3 through 32, and column 11, lines 30 through 41), providing input data containing the geometries to be written on the plate in an input format (column 7, line 36 through column 8, line 23), in a first conversion step fracturing the input data into writing fields (column 7, lines 36 through 62), in a second conversion step cutting the geometries in the fractured database into scan lines (column 8, line 54 through column 9, line 53), and generating for each scan line a scan list containing geometries to be written in the scan line, so called segments (column 9, line 19 through column 10, line 12), and performing the second conversion step in at least two parallel processors, so called segmentizers (column 9, line 19 through column 11, line 28), operating simultaneously but on different writing fields (column 11, line 30 through column 12, line 10), further distributing the scan lists to the beam processor units in accordance with the interlacing of the scan lines (column 10, line 63 through column 11, line 28), and in a third conversion step converting in the beam processor units the scan lists of segments to analog power modulation sequences for the laser beams (column 12, lines 11 through 39).

However, Teitzel fails to expressly disclose if the second conversion step is performed in at least two of the beam processor units, operating simultaneously but on different writing fields. Kelley discloses a method for writing patterns on a light sensitive surface (see abstract, column 1, line 18-column 2, line 61, and column 4, line 45-column 5, line 26) comprising the steps of providing for each beam a beam processor unit with data conversion logic and means for modulating laser beams (column 4, line 45-column 6, line 46, see Fig. 5, rendering pipelines 510_1, 510_2, and 510_N), providing input data containing the geometries to be written on the plate in an input format (column 5, line 11-column 6, line 8), in a first conversion step fracturing the input data into writing fields (column 5, line 27-40), in a second conversion step cutting the

geometries in the fractured database into scan lines (column 5, line 41-column 6, line 46), and generating for each scan line a scan list containing geometries to be written in the scan line, so called segments (column 6, line 9-column 7, line 52), and performing the second conversion step in at least two of the beam processor units, so called segmentizers (see Fig. 5, column 5, line 41-column 6, line 46), operating simultaneously but on different writing fields (column 5, line 41-column 6, line 46), further distributing the scan lists to the beam processor units in accordance with the interlacing of the scan lines (column 5, line 56-column 6, line 8).

Teitzel & Kelley are combinable because they are from the same field of endeavor, being systems that render image data in scan lines using generated lists having geometric data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include the rendering pipeline taught by Kelley in the system of Teitzel. The suggestion/motivation for doing so would have been that Teitzel's system would become more efficient, as the rendered data would be generated in a fast and inexpensive way, as recognized by Kelley in column 10, line 62-column 11, line 19. Therefore, it would have been obvious to combine the teachings of Kelley with the system of Teitzel to obtain the invention as specified in claim 1.

Regarding ***claim 2***, Teitzel and Kelley disclose the method discussed above in claim 1, and Teitzel further teaches that the segments in the scan lists are simplified geometrical representations of those parts of the input geometries that fall in the scan line (column 7, line 46 through column 8, line 37).

Regarding ***claim 3***, Teitzel and Kelley disclose the method discussed above in claim 1, and Teitzel further teaches that the segments in a scan lists are non-overlapping (column 8, lines 24 through 52).

Regarding ***claim 4***, Teitzel and Kelley disclose the method discussed above in claim 1, and Teitzel further teaches that in the segments in a scan lists are rectangles with a length and a width (column 8, lines 1 through 37).

Regarding ***claim 5***, Teitzel and Kelley disclose the method discussed above in claim 1, and Teitzel further teaches that the segments in the scan lists are sorted in the order they will be written by the scanning beam (column 8, lines 1 through 52).

Regarding ***claim 6***, Teitzel and Kelley disclose the method discussed above in claim 1, and Teitzel further teaches that in the conversion in the beam processor units uses a set of conversion rules that are empirically calibrated (column 1, lines 33 through 50, and column 5, line 58 through column 6, line 20).

Regarding ***claim 7***, Teitzel and Kelley disclose the method discussed above in claim 1, and Teitzel further teaches that in the conversion in the beam processor units uses at least one table-lookup function (column 12, line 5 through column 13, line 25).

Regarding ***claim 8***, Teitzel and Kelley disclose the method discussed above in claim 1, and Teitzel further teaches that in the scan lists are distributed to the beam processor units via a cross-switch network (see Fig. 5, 8, and 9, column 7, lines 3 through 25, column 11, lines 42 through 65, and column 14, line 15 through column 15, line 16).

Regarding ***claim 9***, Teitzel and Kelley disclose the method discussed above in claim 1, and Teitzel further teaches that in the scan lists are distributed to the beam processor units via a bus-system (see Figs. 5, 6, and 9, column 13, line 27 through column 15, line 16).

Regarding ***claim 10***, Teitzel and Kelley disclose the method discussed above in claim 1, and Teitzel further teaches that in the scan lists are distributed to the any one of the preceding claims beam processor units by a multiplexer (MUX 806, 808, 809, seen in Fig. 8, column 12, lines 21 through 30).

Regarding ***claim 11***, Teitzel and Kelley disclose the method discussed above in claim 1, and Teitzel further teaches that in the data are pipelined through the second and third conversion steps without intermediate non-volatile storage (column 11, line 54 through column 12, line 20).

Regarding ***claim 12***, Teitzel and Kelley disclose the method discussed above in claim 1, and Teitzel further teaches that in beam boards has an input buffer with room for the scan lists for at least two writing fields (column 11, lines 54 through 65).

Regarding ***claim 13***, Teitzel and Kelley disclose the method discussed above in claim 1, and Teitzel further teaches that the transfer between the segmentizers and the beam processor unit are double buffered, in one output buffer in the segmentizer and in one input buffer in the beam processor unit (column 12, lines 5 through 30).

Regarding ***claim 14***, Teitzel discloses an apparatus for writing of patterns on a light sensitive surface comprising at least two modulated focused laser beams scanning the surface in interlaced parallel scan lines (see abstract, and column 3, line 44 through column 4, line 31), for each laser beam a beam processor unit with data conversion logic and means for modulating the laser beam (column 7, lines 3 through 32, and column 11, lines 30 through 41), means for

accepting input data containing the geometries to be written on the plate in an input format (column 7, line 36 through column 8, line 23), data processing means for in a first conversion step fracturing the input data into writing fields (column 7, lines 36 through 62), parallel data processing means for in a second conversion step cutting the geometries in the fractured database into scan lines (column 8, line 54 through column 9, line 53), and generating for each scan line a scan list containing geometries to be written in the scan line, so called segments (column 9, line 19 through column 10, line 12), data distribution means for distributing the scan lists to the beam processor units in accordance with the interlacing of the scan lines (column 10, line 63 through column 11, line 28), and data conversion and beam modulation means in the beam processors units for in a third conversion step, converting the scan lists of segments to analog power modulation sequences for the laser beams (column 12, lines 11 through 39).

However, Teitzel fails to expressly disclose if the second conversion step is performed in at least two of the beam processor units, operating simultaneously but on different writing fields. Kelley discloses an apparatus (see Figs. 4 and 5) for writing of patterns on a light sensitive surface (see abstract, column 1, line 18-column 2, line 61, and column 4, line 45-column 5, line 26) comprising a beam processor unit for each beam with data conversion logic and means for modulating laser beams (column 4, line 45-column 6, line 46, see Fig. 5, rendering pipelines 510_1, 510_2, and 510_N), means for accepting input data containing the geometries to be written on the plate in an input format (column 5, line 11-column 6, line 8), data processing means for in a first conversion step fracturing the input data into writing fields (column 5, line 27-40), parallel data processing means in the beam processor units for in a second conversion step cutting the geometries in the fractured database into scan lines (see Fig. 5, column 5, line 41-column 6, line

46), and generating for each scan line a scan list containing geometries to be written in the scan line, so called segments (column 6, line 9-column 7, line 52), data distribution means for distributing the scan lists to the beam processor units in accordance with the interlacing of the scan lines (column 5, line 56-column 6, line 8).

Teitzel & Kelley are combinable because they are from the same field of endeavor, being systems that render image data in scan lines using generated lists having geometric data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include the rendering pipeline taught by Kelley in the system of Teitzel. The suggestion/motivation for doing so would have been that Teitzel's system would become more efficient, as the rendered data would be generated in a fast and inexpensive way, as recognized by Kelley in column 10, line 62-column 11, line 19. Therefore, it would have been obvious to combine the teachings of Kelley with the system of Teitzel to obtain the invention as specified in claim 14.

Regarding ***claim 15***, Teitzel discloses a method for writing patterns on a light sensitive surface (see abstract, and column 3, line 44 through column 4, line 31) comprising providing at least two modulated focused laser beams scanning the surface in interlaced parallel scan lines (column 3, line 44 through column 4, line 31), providing for each beam a beam processor unit with data conversion logic and means for modulating the laser beam (column 7, lines 3 through 32, and column 11, lines 30 through 41), providing input data containing geometries to be written on a workpiece (column 7, line 36 through column 8, line 23), fracturing the input data into writing fields via a first conversion (column 7, lines 36 through 62), cutting the geometries in the fractured database into scan lines (column 8, line 54 through column 9, line 53), and

generating for each scan line a scan list containing geometries to be written in the scan line, via a second conversion (column 9, line 19 through column 10, line 12), which is performed in at least two segmentizers (column 9, line 19 through column 11, line 28), distributing the scan lists to the beam processor units in accordance with the interlacing of the scan lines (column 10, line 63 through column 11, line 28), and converting in the beam processor units the scan lists of segments to analog power modulation sequences for the laser beams, via a third conversion (column 12, lines 11 through 39).

However, Teitzel fails to expressly disclose if the second conversion step performed in at least two segmentizers, operating simultaneously but on different writing fields. Kelley discloses a method for writing patterns on a light sensitive surface (see abstract, column 1, line 18-column 2, line 61, and column 4, line 45-column 5, line 26) comprising the steps of providing for each beam a beam processor unit with data conversion logic and means for modulating laser beams (column 4, line 45-column 6, line 46, see Fig. 5, rendering pipelines 510_1, 510_2, and 510_N), providing input data containing geometries to be written on a workspace (column 5, line 11-column 6, line 8), fracturing the input data into writing fields via a first conversion (column 5, line 27-40), cutting the geometries in the fractured database into scan lines (column 5, line 41-column 6, line 46), and generating for each scan line a scan list containing geometries to be written in the scan line, via a second conversion (column 6, line 9-column 7, line 52), which is performed in at least two segmentizers (see Fig. 5, column 5, line 41-column 6, line 46), operating simultaneously but on different writing fields (column 5, line 41-column 6, line 46), distributing the scan lists to the beam processor units in accordance with the interlacing of the scan lines (column 5, line 56-column 6, line 8).

Teitzel & Kelley are combinable because they are from the same field of endeavor, being systems that render image data in scan lines using generated lists having geometric data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include the rendering pipeline taught by Kelley in the system of Teitzel. The suggestion/motivation for doing so would have been that Teitzel's system would become more efficient, as the rendered data would be generated in a fast and inexpensive way, as recognized by Kelley in column 10, line 62-column 11, line 19. Therefore, it would have been obvious to combine the teachings of Kelley with the system of Teitzel to obtain the invention as specified in claim 15.

Regarding ***claim 16***, Teitzel and Kelley disclose the method discussed above in claim 15, and Teitzel further teaches that the segments in the scan lists are sorted in the order they will be written by the scanning beam (column 8, lines 1 through 52).

Regarding ***claim 17***, Teitzel and Kelley disclose the method discussed above in claim 15, and Teitzel further teaches that in the data are pipelined through the second and third conversion steps without intermediate non-volatile storage (column 11, line 54 through column 12, line 20).

Regarding ***claim 18***, Teitzel and Kelley disclose the method discussed above in claim 15, and Teitzel further teaches that the transfer between the segmentizers and the beam processor unit are double buffered, one output buffer being located in the segmentizer and one input buffer being located in the beam processor unit (column 12, lines 5 through 30).

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joe Pokrzywa whose telephone number is (571) 272-7410. The examiner can normally be reached on Monday-Friday, 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward L. Coles can be reached on (571) 272-7402. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Joseph R. Pokrzywa
Primary Examiner
Art Unit 2622

jrp